Trend Study 10-8-00

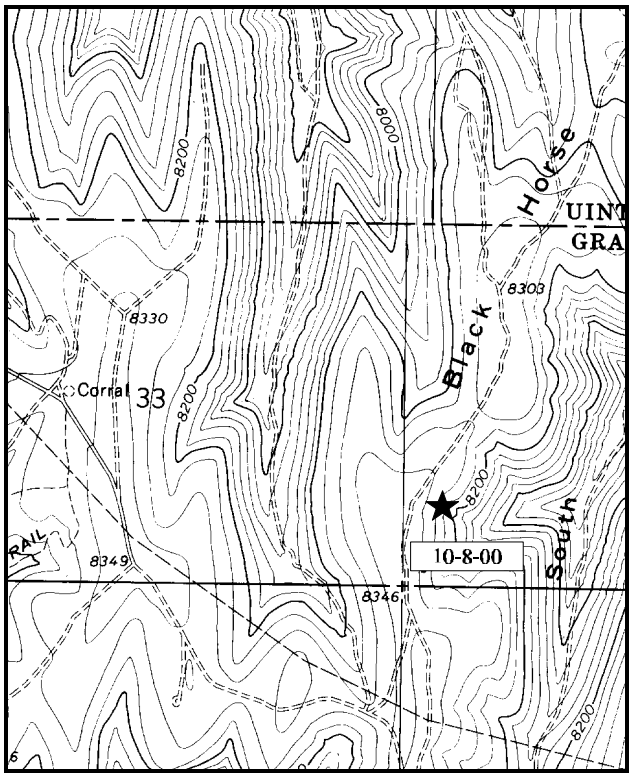
Study site name: Black Horse . Range type: Mixed Mountain Brush .

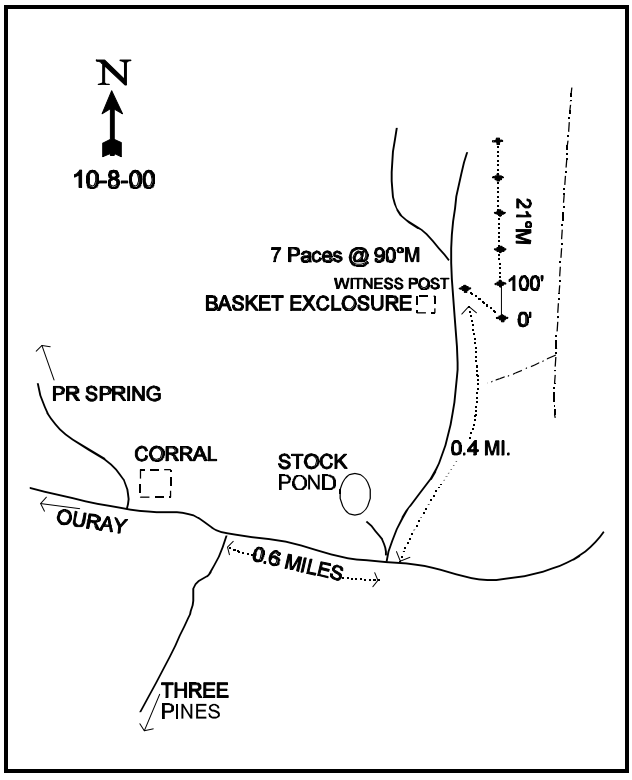
Compass bearing: frequency baseline 21°M .

First frame placement on frequency belts 5 feet. Frequency belt placement; line (11ft*), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft). **Belt 1 centered at 40 feet.

LOCATION DESCRIPTION

At a point 0.6 miles southeast of the intersection of the Seep Ridge road and the Book Cliff Summit road, a road turns north off the divide road and heads up Black Horse Ridge. Go up this road 0.4 miles to a witness post on the right side of the road. The study site is on the east slope of the ridge. From the witness post, walk 7 paces bearing 90°M to the 0-foot baseline stake. The baseline stake has browse tag #9039 attached. The frequency baseline runs parallel to the road. Study markers are 18" green metal fenceposts.





Map Name: PR Spring Diagrammatic Sketch

Township 15 1/2S , Range 24E , Section 34 UTM. 4368403.474 N, 649407.220 E

DISCUSSION

Trend Study No. 10-8 (16A-8)

The Black Horse trend study is located near the Book Cliffs summit in the mountain brush type which is used by deer and elk as summer range. The study is just below the ridge, on a northeast facing, gentle slope at an elevation of 8,300 feet. This is one of the highest elevation trend studies on the unit. There are small stands of aspen and conifers in the drainages, but the dominant vegetation is scrub oak and associated mountain brush. Deer are commonly observed in the area. Cattle graze the ridge on a rotational deferred system between June and September. Pellet group transect data in 2000 estimate moderate use by deer (57 deer days use/acre, 141 ddu/ha), light use by elk (22 elk days use/acre, 54 edu/ha), and light use by cattle (4 cow days use/acre, 10 cdu/ha).

The soils are in the Seeprid-Utso loam complex. These soils typically are moderately deep and well-drained. On the study site, there appears to be a compacted clay horizon under 4-6 inches of loose, stony surface loam. This clay layer is quite variable as it was sampled as deep as 15 inches below the surface. Run-off and pedestaling occurs in open grazed areas and on steeper areas, but overall the vegetative cover is adequate to control most excessive erosion. This soil is grouped into the Mountain Stony Loam (Browse) ecological site, indicating a potential plant community of 30% grass, 10% forbs and 60% shrubs (composition by air-dry weight). Effective rooting depth is estimated at just over 13 inches with soil temperature averaging 49°F at nearly 15 inches in depth. Percent organic matter is quite high at 4.4% with soil reaction being neutral (pH of 6.8).

This mixed mountain brush community is composed of a variety of valuable shrubs. Large serviceberry and clones of Gambel oak are the primary overstory species. Mature serviceberry average over 4 feet in height with some individuals being over 5 feet in height. These shrubs are vigorous with the majority of the plants showing only light to moderate hedging in all years sampled. The prevalence of rust on the leaves led to a poor vigor classification for 22% of the plants in 1988. Vigor has since improved on most of the population. The population has remained fairly stable over all sampling years with 2,660 plants/acre being estimated in 2000. Recruitment from the young age class was extremely high in 1988 (94% of the population) and 1995 (65% of the population). Currently, recruitment is moderately high at 26%. The population appears to be stabilizing with two-thirds of the population being mature. In 2000, oak density was estimated at 4,580 stems/acre. The difference in 1995 and 2000 density estimates may be that individual patches were counted in 1995, whereas individual stems were counted in 2000. Currently, the young age class makes up 73% of the population pointing to an increasing population in the future. Use is mostly light and vigor is good, with mature plants averaging nearly 5 feet in height in 2000.

Other preferred browse species include: mountain big sagebrush, bitterbrush, true mountain mahogany, chokecherry, and snowberry. Of these species, most mahogany and bitterbrush are the heavily utilized. In 1988, only one mahogany was sampled. It was classified as decadent and heavily utilized. The new much larger sample design used in 1995, estimated an average of 1,140 plants/acre in 1995 and 1,160 plants/acre in 2000. The larger sampling design gives much better estimates for species with discontinuous and/or clumped distributions. Use is currently (‘00) mostly moderate (40%) with an additional 19% displaying heavy use. Currently, all individuals sampled have good vigor although several individuals were noted as having insect damage. Mahogany looks to increase in the future with 45% of the population being young plants. Mature plants average over 3 feet in height and crown. Bitterbrush are uncommon, currently (‘00) estimated at 240 plants/acre. Half of the population shows moderate or heavy use in 2000, with good vigor and no decadency. Snowberry and mountain big sagebrush provide the most browse cover of all species at Black Horse. Snowberry contributed 33% of the browse cover in 1995, decreasing to 26% in 2000. Mountain big sagebrush contributed 24% of the total browse cover in 1995, decreasing to 21% in 2000. Snowberry is currently estimated at 5,720

plants/acre, with sagebrush being estimated at 1,980 plants/acre. These species were mostly unutilized in 1988, but during the 1995 reading, both species displayed some moderate use. Use on sagebrush in 2000 slightly increased with 22% of the population displaying moderate use and an additional 8% showing heavy use. Use on snowberry remains nearly the same with 15% of the population displaying moderate use in 2000, an increase from 11% in 1995. Sagebrush plants are large and vigorous, although a majority were classified as decadent in 1988. With the improved sample implemented in 1995, percent decadency was estimated at 2% in 1995, and 11% in 2000.

Since the area is primarily summer range, herbaceous forage is especially important. Herbaceous vegetation is fairly abundant with grasses providing around 16% average cover in 1995 and 2000. Forbs are also moderately abundant and contribute about 10% average cover in 1995 and 2000. Combined, herbaceous species provide approximately 40% of the total vegetative cover in 1995 and 2000. Due to the abundance of browse at this site, herbaceous vegetation is somewhat suppressed and could increase with a reduction in browse density and cover. Most grasses were at least moderately utilized by cattle during the 1988 reading. Utilization was light, if any, in 2000. The most numerous species are a sedge, thickspike wheatgrass, Kentucky bluegrass, Lettermen needlegrass, and mutton bluegrass. The sedge is especially abundant, accounting for 59% of the total grass cover in 1995 and 2000. Sum of nested frequency for grasses has slightly increased during all sampling periods.

Forbs comprised 16% of the total vegetative cover in 1995, decreasing to 14% in 2000. Thirty-four species were encountered in 1995, and 28 in 2000. The drought during the spring and summer of 2000 undoubtedly decreased the presence of forbs as sum of nested frequency substantially decreased in 2000. Weedy milkvetch, ballhead sandwort, mat penstemon, and Eaton fleabane are currently (‘00) the most abundant. Several valuable forb species occur on the site including Pacific aster, arrowleaf balsamroot, penstemon, Indian paintbrush, and sulfur buckwheat.

1988 APPARENT TREND ASSESSMENT

Basal vegetative cover accounts for 12% of the basic ground cover. Litter cover (55.5%) was found only in association with the shrubs. Rock and pavement cover combined for about 10%. Percent bare ground was at almost 23%. Soil trend appears stable. Browse trend also appears stable. The most preferred browse species including true mountain mahogany and antelope bitterbrush occur in low numbers and are heavily utilized. Snowberry, mountain big sagebrush, and serviceberry showed light to moderate hedging and appear to have stable to expanding populations. The herbaceous trend appears stable.

1995 TREND ASSESSMENT

Percent bare ground has declined considerably since the last reading from almost 23% to 11%. Soil trend is considered slightly improving. The browse trend is slightly up with many of the preferred species displaying lighter utilization, improved vigor, and low decadency rates. Density numbers for many of the shrubs are different due to the larger sample size giving much better population estimates for the shrubs. Trend for grasses and forbs is stable. Sum of nested frequency of grasses increased slightly with significant increases for sedge and Kentucky bluegrass. Sum of nested frequency of forbs remained about the same.

TREND ASSESSMENT
soil - stable to slightly improving (4)
browse - slightly up (4)
herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is stable. Ground cover characteristics remain relatively stable compared to 1995 estimates. The ratio of protective ground cover to bare soil is very good with minimal erosion. Trend for the key browse species, serviceberry and true mountain mahogany, is stable. Serviceberry and mahogany show stable densities, high recruitment, low decadency, and good vigor. Use on these preferred species is not as extreme as is sometimes the case. Mountain big sagebrush provides additional palatable forage, although this species is not considered the key species on summer range, and is less preferred compared to mahogany, serviceberry, and low densities of bitterbrush on the site. Trend for the herbaceous understory is stable. Sum of nested frequency of perennial grasses slightly increased while that of forbs decreased. Combined, sum of nested frequency of perennial species slightly decreased, but not enough to warrant a downward trend.

TREND ASSESSMENT
soil - stable (3)
browse - stable for the key species (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 10 , Study no: 8

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron cristatum	-	-	6	-	-	2	-	.03
G	Agropyron dasystachyum	ab108	a103	b128	47	35	52	1.58	1.92
G	Bromus anomalus	b71	b67	a27	30	24	11	.95	.23
G	Bromus tectorum (a)	-	3	-	-	1	-	.00	-
G	Carex spp.	215	234	235	77	80	79	9.30	9.65
G	Koeleria cristata	a-	a3	b15	-	1	6	.00	.27
G	Phleum pratense	-	-	7	-	-	2	-	.30
G	Poa fendleriana	35	29	40	14	9	14	1.18	.46
G	Poa pratensis	39	54	63	16	18	21	1.74	2.42
G	Sitanion hystrix	a3	b13	ab6	1	7	2	.28	.03
G	Stipa lettermani	a4	a23	b62	2	11	22	.70	1.13
Total for Annual Grasses		0	3	0	0	1	0	0.00	0
Total for Perennial Grasses		475	526	589	187	185	211	15.76	16.47
Total for Grasses		475	529	589	187	186	211	15.76	16.47
F	Achillea millefolium	a15	b44	ab30	6	17	14	.60	.19
F	Agoseris glauca	a-	a3	b26	-	1	13	.00	.19
F	Androsace septentrionalis (a)	-	1	3	-	1	1	.00	.00
F	Arabis spp.	-	-	6	-	-	3	-	.21
F	Arenaria congesta	b141	ab104	a74	54	39	31	1.27	.65
F	Artemisia ludoviciana	4	-	-	2	-	-	-	-
F	Aster chilensis	b89	a51	a29	38	22	12	.45	.21

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
F	Astragalus miser	78	95	112	40	35	46	3.54	4.46
F	Balsamorhiza sagittata	$_{b}$79	$_{a}$18	$_{a}$21	35	11	9	.73	.66
F	Castilleja flava	$_{b}$27	$_{a}$6	$_{ab}$17	15	3	8	.01	.09
F	Calochortus nuttallii	$_{a}$-	$_{b}$7	$_{ab}$3	-	5	1	.05	.00
F	Chenopodium spp. (a)	-	3	-	-	1	-	.00	-
F	Cirsium spp.	28	23	11	13	12	9	.41	.37
F	Comandra pallida	$_{b}$120	$_{a}$37	$_{a}$18	50	19	7	.17	.09
F	Collinsia parviflora (a)	-	4	-	-	2	-	.01	-
F	Crepis acuminata	$_{a}$3	$_{b}$48	$_{b}$29	2	19	13	.26	.26
F	Cymopterus spp.	$_{a}$-	$_{a}$-	$_{b}$8	-	-	4	-	.09
F	Delphinium bicolor	$_{a}$-	$_{b}$8	$_{a}$-	-	4	-	.03	-
F	Eriogonum alatum	-	-	1	-	-	1	-	.00
F	Erigeron eatonii	$_{a}$-	$_{c}$101	$_{b}$47	-	41	22	.67	.28
F	Erigeron flagellaris	$_{c}$53	$_{a}$-	$_{b}$25	25	-	11	-	.32
F	Eriogonum umbellatum	$_{b}$20	$_{b}$36	$_{a}$6	11	17	2	.24	.03
F	Gayophytum ramosissimum (a)	-	8	-	-	3	-	.04	-
F	Gilia spp. (a)	-	2	-	-	1	-	.00	-
F	Hymenoxys acaulis	-	8	1	-	3	1	.04	.03
F	Ipomopsis aggregata	2	-	-	2	-	-	-	-
F	Lathyrus brachycalyx	$_{a}$-	$_{b}$14	$_{b}$21	-	6	9	.60	.34
F	Linum lewisii	-	3	7	-	1	3	.01	.04
F	Lomatium spp.	$_{a}$-	$_{b}$7	$_{ab}$4	-	4	2	.02	.06
F	Lupinus argenteus	$_{ab}$3	$_{b}$11	$_{a}$-	1	5	-	.12	-
F	Oenothera spp.	2	-	-	1	-	-	-	-
F	Penstemon caespitosus	61	43	57	28	19	26	.21	.47
F	Pedicularis centranthera	$_{a}$-	$_{b}$8	$_{a}$-	-	4	-	.10	-
F	Penstemon pachyphyllus	3	6	2	1	3	1	.04	.00
F	Phlox longifolia	$_{ab}$37	$_{b}$41	$_{a}$20	17	20	8	.15	.04
F	Polygonum douglasii (a)	-	$_{b}$28	$_{a}$-	-	13	-	.14	-
F	Senecio integerrimus	-	3	2	-	2	1	.03	.00
F	Taraxacum officinale	$_{a}$1	$_{c}$36	$_{b}$12	1	18	9	.26	.09
F	Tragopogon dubius	3	-	-	1	-	-	-	-
F	Unknown forb-annual (a)	-	3	-	-	1	-	.00	-
F	Unknown forb-perennial	5	8	-	3	4	-	.04	-
F	Viguiera multiflora	3	15	4	1	6	2	.13	.01
Total for Annual Forbs		0	49	3	0	22	1	0.21	0.00
Total for Perennial Forbs		777	784	593	347	340	268	10.28	9.26
Total for Forbs		777	833	596	347	362	269	10.49	9.27

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 10 , Study no: 8

Type	Species	Strip Frequency '95	Strip Frequency '00	Average Cover % '95	Average Cover % '00
B	Amelanchier alnifolia	43	55	3.55	4.26
B	Artemisia tridentata vaseyana	31	56	9.49	8.51
B	Cercocarpus montanus	27	30	4.30	4.50
B	Chrysothamnus depressus	5	4	.01	-
B	Chrysothamnus nauseosus	0	1	-	-
B	Chrysothamnus viscidiflorus lanceolatus	68	71	3.51	2.12
B	Gutierrezia sarothrae	4	8	.19	.10
B	Mahonia repens	25	43	1.05	2.43
B	Opuntia spp.	2	2	-	-
B	Prunus virginiana	8	9	.51	.33
B	Purshia tridentata	3	8	.68	1.03
B	Quercus gambelii	10	44	2.83	6.07
B	Rosa woodsii	2	1	.18	.00
B	Symphoricarpos oreophilus	75	86	13.24	10.39
B	Tetradymia canescens	3	4	.00	.15
Total for Browse		306	422	39.60	39.93

CANOPY COVER --
Herd unit 10 , Study no: 8

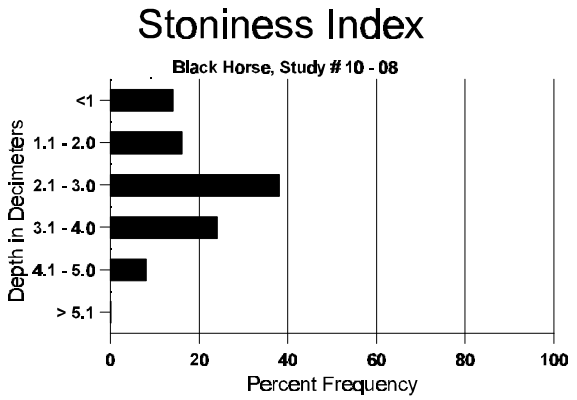
Species	Percent Cover '00
Amelanchier alnifolia	2
Quercus gambelii	2

BASIC COVER --
Herd unit 10 , Study no: 8

Cover Type	Nested Frequency '95	Nested Frequency '00	Average Cover % '88	Average Cover % '95	Average Cover % '00
Vegetation	373	372	11.75	55.30	61.88
Rock	139	96	4.25	6.09	4.62
Pavement	51	114	6.00	.51	1.54
Litter	390	381	55.50	53.79	56.37
Cryptogams	9	3	0	.07	.00
Bare Ground	176	178	22.50	10.82	12.18

SOIL ANALYSIS DATA --
Herd Unit 10, Study # 8, Study Name: Black Horse

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.23	48.6 (14.80)	6.8	26.0	33.4	40.6	4.4	10.8	252.8	0.8



PELLET GROUP FREQUENCY --
Herd unit 10 , Study no: 8

Type	Quadrat Frequency '95	Quadrat Frequency '00	Pellet Transect: Pellet Groups per Acre '00	Pellet Transect: Days Use per Acre (ha) '00
Rabbit	5	13	52	N/A
Elk	-	4	287	22 (54)
Deer	19	16	740	57 (141)
Cattle	6	-	44	4 (10)

BROWSE CHARACTERISTICS --
Herd unit 10 , Study no: 8

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
S	88	5	-	-	2	-	-	-	-	-	7	-	-	-	466			7
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	2	-	-	5	-	-	8	-	-	-	160			8
Y	88	41	5	3	2	-	-	-	-	-	42	-	9	-	3400			51
	95	32	4	-	25	17	-	-	-	-	78	-	-	-	1560			78
	00	25	-	-	4	3	-	3	-	-	35	-	-	-	700			35
M	88	-	-	1	-	-	-	-	-	-	-	-	1	-	66	54	55	1
	95	21	9	2	3	4	-	-	-	-	39	-	-	-	780	44	34	39
	00	40	-	3	18	12	10	1	2	-	86	-	-	-	1720	51	36	86
D	88	1	-	1	-	-	-	-	-	-	-	-	2	-	133			2
	95	2	-	1	-	-	-	-	-	-	2	-	-	1	60			3
	00	4	-	1	-	2	1	-	-	4	5	2	4	1	240			12
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	09%	09%	22%	-33%
'95	28%	03%	.83%	+10%
'00	13%	14%	04%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	3599	Dec:		4%
'95	2400			3%
'00	2660			9%

Artemisia tridentata vaseyana																		
S	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	00	12	-	-	-	-	-	-	-	-	12	-	-	-	240			12
Y	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	95	12	1	-	-	-	-	-	-	-	13	-	-	-	260			13
	00	13	2	-	1	-	-	-	-	-	16	-	-	-	320			16
M	88	7	-	-	-	-	-	-	-	-	7	-	-	-	466	34	31	7
	95	33	10	-	1	-	-	-	-	-	42	-	2	-	880	29	40	44
	00	44	14	8	3	3	-	-	-	-	72	-	-	-	1440	29	36	72
D	88	11	-	-	-	-	-	-	-	-	10	1	-	-	733			11
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	7	3	-	1	-	-	-	-	-	10	-	-	1	220			11
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	-13%
'95	19%	00%	03%	+41%
'00	22%	08%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	1332	Dec:		55%
'95	1160			2%
'00	1980			11%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	-	-	1	-	20			1
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	12	7	-	2	-	-	-	-	-	21	-	-	-	420			21
	00	7	11	-	5	3	-	-	-	-	16	10	-	-	520			26
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	23	4	2	1	-	-	-	2	36	-	-	-	720	44	49	36
	00	7	1	2	4	7	8	1	-	-	30	-	-	-	600	41	37	30
D	88	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	1	-	-	-	1	-	-	-	2	-	-	-	40			2
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	100%	00%	+94%
'95	54%	11%	00%	+ 2%
'00	40%	19%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	66	Dec:		100%
'95	1140			0%
'00	1160			3%

Chrysothamnus depressus																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	1	-	-	-	-	-	-	-	5	-	-	-	100	4	7	5
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100	14	5	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	17%	00%	00%	+25%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	0	Dec:		-
'95	120			-
'00	160			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	1	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	100%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	20		-

Chrysothamnus viscidiflorus lanceolatus																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	88	18	-	-	-	-	-	-	-	-	18	-	-	-	1200			18
	95	66	-	-	-	-	-	-	-	-	66	-	-	-	1320			66
	00	13	-	-	3	-	-	-	-	-	16	-	-	-	320			16
M	88	43	-	-	1	-	-	-	-	-	44	-	-	-	2933	14	9	44
	95	160	-	-	7	-	-	-	-	-	167	-	-	-	3340	12	14	167
	00	190	19	-	15	-	-	6	-	-	230	-	-	-	4600	15	16	230
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	1	-	-	-	-	-	-	-	3	-	-	1	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+11%
'95	00%	00%	00%	+ 7%
'00	08%	00%	.40%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	4133	Dec:	0%
	'95	4660		0%
	'00	5000		2%

Gutierrezia sarothrae																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	00	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	10	-	-	-	-	-	-	-	-	10	-	-	-	200	6	7	10
	00	37	-	-	-	-	-	-	-	-	37	-	-	-	740	6	6	37

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	+71%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	300		-
	'00	1020		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Mahonia repens																		
Y	88	24	-	-	-	-	-	1	-	-	25	-	-	-	1666			25
	95	73	-	-	15	-	-	-	-	-	88	-	-	-	1760			88
	00	13	-	-	4	-	-	2	-	-	19	-	-	-	380			19
M	88	8	-	-	-	-	-	-	-	-	8	-	-	-	533	10	6	8
	95	49	-	-	21	3	-	-	-	-	73	-	-	-	1460	3	5	73
	00	184	-	-	78	-	-	33	-	-	269	-	26	-	5900	3	6	295

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+32%
'95	02%	00%	00%	+49%
'00	00%	00%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	2199	Dec:	-
	'95	3220		-
	'00	6280		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	5	9	3
	00	1	-	-	1	-	-	-	-	-	2	-	-	-	40	4	8	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	-33%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	60		-
	'00	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Prunus virginiana																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	10	-	-	3	-	-	-	-	-	13	-	-	-	260			13
Y	88	2	2	-	4	-	-	4	-	-	12	-	-	-	800			12
	95	33	-	-	-	-	-	-	-	-	33	-	-	-	660			33
	00	26	-	-	5	-	-	7	-	-	38	-	-	-	760			38
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	10	11	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	19	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	17%	00%	00%	-10%
'95	00%	00%	00%	+ 5%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	800	Dec:	-
	'95	720		-
	'00	760		-

Purshia tridentata																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	-	-	2	-	-	-	-	-	-	2	-	-	-	133	7	15	2
	95	3	-	-	1	-	-	-	-	-	4	-	-	-	80	8	23	4
	00	6	2	-	-	-	1	-	-	2	11	-	-	-	220	10	29	11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	67%	00%	-60%
'95	00%	00%	00%	+67%
'00	25%	25%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	199	Dec:	-
	'95	80		-
	'00	240		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Quercus gambelii																		
S	88	4	-	-	-	-	-	-	-	-	4	-	-	-	266			4
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	53	12	-	1	-	-	-	-	-	65	-	1	-	4400			66
	95	9	-	1	-	-	-	-	-	-	10	-	-	-	200			10
	00	108	8	-	39	-	-	11	-	-	166	-	-	-	3320			166
M	88	2	1	-	5	-	-	-	1	-	9	-	-	-	600	70	56	9
	95	5	9	-	-	-	-	-	-	-	14	-	-	-	280	57	64	14
	00	39	-	-	8	2	-	-	6	-	55	-	-	-	1100	59	41	55
D	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	3	2	-	1	2	-	-	-	-	5	-	1	2	160			8
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	280			14

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	17%	00%	01%	-91%
'95	38%	04%	00%	+90%
'00	06%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	5066	Dec:		1%
'95	480			0%
'00	4580			3%

Rosa woodsii																		
Y	88	16	-	-	-	-	-	-	-	-	15	-	1	-	1066			16
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	4	-	-	-	-	-	-	-	-	3	-	1	-	266	16	10	4
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	7	5	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	10%	-97%
'95	00%	00%	00%	-50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	1332	Dec:		-
'95	40			-
'00	20			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	8	-	-	-	-	-	-	-	-	8	-	-	-	160			8
	00	9	-	-	1	-	-	-	-	-	10	-	-	-	200			10
Y	88	63	-	-	1	-	-	-	-	-	41	-	23	-	4266			64
	95	47	6	-	16	5	-	-	-	-	74	-	-	-	1480			74
	00	13	-	-	1	-	-	-	-	-	14	-	-	-	280			14
M	88	28	-	-	-	-	-	-	-	-	7	-	21	-	1866	15	12	28
	95	157	17	2	23	1	-	-	-	-	200	-	-	-	4000	17	27	200
	00	171	32	-	51	9	-	8	-	-	271	-	-	-	5420	14	23	271
D	88	2	-	-	-	-	-	-	-	-	-	-	2	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	1	-	-	-	-	1	-	-	-	20			1
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	49%	-13%
'95	11%	.72%	00%	+ 4%
'00	15%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	6265	Dec:		2%
'95	5480			0%
'00	5720			0%

Tetradymia canescens																		
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	2	-	-	1	1	-	-	-	-	4	-	-	-	80	14	12	4
	00	-	-	-	5	-	-	-	-	-	5	-	-	-	100	15	9	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	+18%
'95	25%	00%	00%	+33%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'88	66	Dec:	-
'95	80		-
'00	120		-